UNITED STATES PATENT AND TRADEMARK OFFICE

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EXAMINER
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ART UNIT	PAPER NUMBER
2654	14

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	**Applicant(s)**
Office Action Summary	09/748,453	HWANG ET AL.
	Examiner	**Art Unit**	
	Daniel A. Nolan	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 April 2004* .

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *09 June 2003* is: a)☒ approved b)☐ disapproved by the Examiner.

     If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All b)☐ Some * c)☐ None of:

         1.☐ Certified copies of the priority documents have been received.

         2.☐ Certified copies of the priority documents have been received in Application No. _____ .

         3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

     a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)	4)☐ Interview Summary (PTO-413) Paper No(s). _____ .
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)	5)☐ Notice of Informal Patent Application (PTO-152)
3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2,3* .	6)☐ Other: .

U.S. Patent and Trademark Office

PTO-326 (Rev. 04-01)   **Office Action Summary**   Part of Paper No. 14

DETAILED ACTION

1.   The text of those sections of Title 35, U.S. Code not included in this action can

be found in a prior Office action.

Response to Arguments

2.   Applicant's arguments filed 12 April 2004 have been fully considered but they are

not persuasive.

The argument that Smith et al does not make a selection based on scores of

speech and acoustic description pertinent to claims 1-4, (page 4 lines 3-4), claim 5

(page 5 lines 5-8), claims 6-8 (page 7 lines 5-9), claims 9-11 (page 8 lines 8-11), claim

18 (page 12 lines 3-5) happens not to be the case, as evinced in the action with

reference to the claim (column 12 lines 30-37).

With further regard to claims 6 and 9-11, the argument that Bahl et al does not

generate scores for syllable-like units (page 7 line 2 & page 8 lines 12-15) is

contradicted with the establishing of syllables as a basic unit (column 2 lines 30-34) to

be considered with the referenced phones. In response to the argument (page 8 last

paragraph), the rejection of that feature for claim 9 is maintained by support of the cited

reference to Contolini et al (column 6 lines 56-57) with the further disclosure that the

syllablic characteristic comprises the leaf nodes of the tree and that the score estimator

rescores each (column 6 lines 61-65).

With regard to the argument that <u>Gupta *et al*</u> does not support speech-based phonetic description (page 11 1st paragraph), the cited reference does not support the argument stated regarding populating graph (column 5 lines 24-39) and so the rejection is maintained given the understanding that *phoneme rules* generating possible phonetic transcriptions (column 5 lines 25-26).

With regard to claims 19-21, the citation of <u>Schulze</u> is found to apply only to an exception to the invention, those languages that cannot be divided into words or syllable-like units and so the reference is seen to be out of context to the argument.

Regarding claims 20-21, the argument that *there is no latitude in how trigrams are identified in a word* cannot be seen to apply to <u>Schulze</u> given the disclaimer (column 16 lines 37-39 and 56-67).

Claim Rejections - 35 USC § 103

3.   This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions cover ed therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Smith *et al* & Häb-Umbach *et al*

4.   Claims 1–4 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Smith *et al* (U.S. Patent 6,408,271 B) in view of Häb-Umbach *et al* (U.S. Patent

5,873,061 A).

5.   Regarding claim 1, the features employed by Smith *et al* in *generating phrasal*

transcriptions for speech recognition dictionaries by permutating word transcriptions for

each vocabulary item in an orthographic phrase read on the features of the *method for*

adding an acoustic description of a word to a speech recognition lexicon of the

immediate application as follows:

-    Smith *et al* (column 6 lines 15-20) reads on the feature of *converting the text of the*

     word into at least one orthographically derived acoustic description of the word;

-    Smith *et al* (column 6 lines 42-46) reads on the feature of *generating a score for an*

     orthographically derived acoustic description based in part on a comparison between

     the orthographically derived acoustic description and a speech signal representing a

     user's pronunciation of the word;

-    Smith *et al* (with *generating* steps 202 & 302 in figures 2 & 3) reads on the feature

     of identifying a speech-based acoustic description 804 in figure 8) *representing the*

     user's pronunciation of the word to produce a speech-based *acoustic description of*

     the word and a score for the speech-based *acoustic description; and*

-    Smith *et al* (column 12 lines 26-37) reads on the feature of *selecting one of the*

     orthographically derived acoustic description and the speech-based *acoustic*

     description as the acoustic description of the word based on the score for the

orthographically (column 12 lines 30-31) *derived acoustic description and the score*

for the speech-based *acoustic description* (column 12 lines 35-37).

Smith *et al* does not stipulate that the *acoustic description* be either speech-

based or that it is *not associated with the text of the word*. The invention *for*

constructing a model of a new word for addition to a word model database of a speech

recognition system of Häb-Umbach *et al* (figures 1 & 2) reads on the limitation that the

acoustic description is speech-based (column 3 lines 14-17) and the step of identifying

a speech-based acoustic description *from the speech signal representing the user's*

pronunciation of the word, wherein the speech-based acoustic description is not

associated with the text of the word (column 4 lines 35-42). It would have been obvious

to a person of ordinary skill in the art of speech signal processing at the time of the

invention to apply the method/teachings of Häb-Umbach *et al* to the device/method of

Smith *et al* so as to make recognition not be dependent on transcription by having any

subsequent transcription be a separate independent operation apart from of recognition.

6.   Regarding claim 2, the claim is set forth with the same limits as claim 1.

Smith *et al* (column 13 lines 53-56) reads on the feature of *generating an acoustic*

model score.

7.   Regarding claim 3, the claim is set forth with the same limits as claim 2.

Smith *et al* (column 13 lines 57-60) reads on the feature of *generating an acoustic*

model score for at least one <u>speech-based</u> *acoustic description and using the score as*

at least part of the score for the <u>speech-based</u> *acoustic description.*

8.   Regarding claim 4, the claim is set forth with the same limits as claim 3.

<u>Smith *et al*</u> (802 in figure 8) reads on the feature of *using the same acoustic model*

(specified by *"a speech model set"*, column 13 line 52) *to generate both acoustic model*

scores (lines 46-56).

Smith *et al*, Häb-Umbach *et al* & Bahl *et al*'⁴²⁶

9.   Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over <u>Smith *et*</u>

<u>*al*</u> in view of <u>Häb-Umbach *et al*</u> and further in view of <u>Bahl *et al*'⁴²⁶</u> (U.S. Patent

5,875,426).

10.   Regarding claim 5, the claim is set forth with the same limits as claim 3.

Neither <u>Smith *et al*</u> nor <u>Häb-Umbach *et al*</u> teach *generating a language model score.*

The <u>Bahl *et al*'⁴²⁶</u> method/system for *recognizing speech having word liaisons by*

adding a phoneme to reference word models (column 3 lines 55-60) reads on the

feature of *generating a language model score for the at least one* <u>speech-based</u>

acoustic description and (lines 58-59) *using the language model score as part of the*

score for the at least one <u>speech-based</u> *acoustic description.*

It would have been obvious to a person of ordinary skill in the art of speech

signal processing at the time of the invention to apply the method/teachings of <u>Bahl *et*</u>

al[426] to the device/method of <u>Smith *et al*</u> & <u>Häb-Umbach *et al*</u> so as to consider context among the bases of making an acoustic decision.

Smith *et al*, Bahl *et al*[426] & Bahl *et al*[921]

11. Claims 6–8 are rejected under 35 U.S.C. 103(a) as being unpatentable over <u>Smith *et al*</u> in view of <u>Häb-Umbach *et al*</u> and further in view of <u>Bahl *et al*</u>[426] and further in view of <u>Bahl *et al*</u>[921] (U.S. Patent 6,377,921).

12. Regarding claim 6, the claim is set forth with the same limits as claim 5. Neither <u>Smith *et al*</u> nor <u>Häb-Umbach *et al*</u> teach *generating a language model score.* The <u>Bahl *et al*</u>[921] method/system for *identifying mismatches between assumed and actual pronunciations of words* (column 2 lines 30-38) reads on the feature of *generating an acoustic model score and a language model score* (lines 39-40 from 18B in figure 1) *for a sequence of syllable-like units* (column 5 lines 47-48) *and* (with lines 55-61) the further feature that *the* <u>speech-based</u> *acoustic description is derived from the sequence of syllable-like units.*

It would have been obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of <u>Bahl *et al*</u>[921] to the device/method of <u>Smith *et al*</u> & <u>Häb-Umbach *et al*</u> to increase precision and avoid prosodic differences by addressing the lower cohesive elements of speech.

13. Regarding claim 7, the claim is set forth with the same limits as claim 6. Neither <u>Smith *et al*</u> nor <u>Häb-Umbach *et al*</u> teach *generating a language model score.*

Bahl *et al*[921] (with the "*phones*" of column 6 line 13) reads on the feature of *dividing the sequence of syllable-like units into a sequence of phonemes*, which would have made it obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Bahl *et al*[921] to the device/method of Smith *et al* so as to not to over look minor utterances by considering each potential word segment separately.

14.   Regarding claim 8, the claim is set forth with the same limits as claim 6. Neither Smith *et al* nor Häb-Umbach *et al* teach *generating a language model score*. Bahl *et al*[426] (column 3 lines 51-53) reads on the feature of *generating a language model score based on a trigram language model for syllable-like units,* which would have made it obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Bahl *et al*[426] to the device/method of Smith *et al* & Häb-Umbach *et al* so as to more quickly isolate candidates from combinations of segments.

Smith *et al*, Häb-Umbach *et al*, Bahl *et al*[426] & Contolini *et al*

15.   Claims 9–11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith *et al* in view of Häb-Umbach *et al* and further in view of Bahl *et al*[426] and further in view of Contolini *et al* (U.S. Patent 6,233,553 B1).

16.   Regarding claim 9, the claim is set forth with the same limits as claim 6. Neither Smith *et al* nor Häb-Umbach *et al* teach *generating a language model score.*

Contolini _et al_, in the _method and system for automatically determining phonetic transcriptions associated with spelled words_, reads on the feature of _generating acoustic model_ (of claim 4 limiting by claim 1) _scores for each of a sequence of phonemes_ (column 7 line 6) _that form the sequence of syllable-like units_ (column 6 lines 56-57).

It would have been obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Contolini _et al_ to the device/method of Smith _et al_ & Häb-Umbach _et al_ so as to be able to relate the results of the recognition that might require correction to those elements that would be familiar to the speaker.

17.   Regarding claim 10, the claim is set forth with the same limits as claim 1. Neither Smith _et al_ nor Häb-Umbach _et al_ specify the product reaching a state accessible for human intervention. Contolini _et al_ does so permit such adjustments, with (figure 2) reading on the feature of _displaying a user interface comprising an edit box_ (item 35) _in which a user may enter the text of the word_ (as according to the 1st lines of the Abstract) _and a list box_ (item 34) _that displays words for which an acoustic description has been previously added to the speech recognition lexicon._

It would have been obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Contolini _et al_ to the device/method of Smith _et al_ & Häb-Umbach _et al_ so as to permit refinements that recognize exceptions to the rules used to set up the vocabulary.

18.   Regarding claim 11, the claim is set forth with the same limits as claim 10.

Neither <u>Smith *et al*</u> nor <u>Häb-Umbach *et al*</u> specify the product reaching a state

accessible for human intervention.

-   <u>Contolini *et al*</u> (figure 2 & column 4 lines 17-25) reads on the features of *receiving*

    an indication that a user has selected a word in the list box (line 22);

-   <u>Contolini *et al*</u> (column 5 lines 55-56) reads on the features of *retrieving the added*

    acoustic description of the word from the speech recognition lexicon and converting

    the retrieved acoustic description into an audible signal.

-   It would have been obvious to a person of ordinary skill in the art of speech signal

    processing at the time of the invention to apply the method/teachings of <u>Contolini *et*</u>

    <u>*al*</u> to the device/method of <u>Smith *et al*</u> & <u>Häb-Umbach *et al*</u> so as to audibly confirm

    the validity of the revision.

Gupta *et al* & Häb-Umbach *et al*

19.   Claim 12–17 are rejected under 35 U.S.C. 103(a) as being unpatentable over

<u>Gupta *et al*</u> (U.S. Patent 6,243,680 B1) in view of <u>Häb-Umbach *et al*</u>.

20.   Regarding claim 12, the *apparatus* of <u>Gupta *et al*</u> *for obtaining a transcription of*

phrases through text and spoken utterances relates to the features for *a computer-*

readable medium of the immediate application as follows:

-   <u>Gupta *et al*</u> (column 1 lines 56-57) reads on the feature of *receiving text of a word*

    (column 3 lines 27-28) *for which a phonetic description is to be added to a speech*

recognition lexicon (line 56) and on the feature of *receiving a representation of a*

speech signal produced by a person pronouncing the word (line 57);

- Gupta *et al* (412 → 400 in figure 4) reads on the feature of *converting the text of the*

  word into a text-based phonetic description of the word;

- Gupta *et al* (402 → 404 in figure 4) reads on the feature of *generating a speech-*

  based phonetic description of the word from the representation of the speech signal;

- Gupta *et al* (406 in figure 4) reads on the feature of *selecting a phonetic description*

  of the word to add to the speech recognition lexicon by selecting between the text-

  based phonetic description and the speech-based phonetic description based in part

  on the correspondence between each phonetic description and the representation of

  the speech signal.

Gupta *et al* does not stipulate that the *acoustic description* be either speech-

based or that it is *not associated with the text of the word.* The invention *for*

constructing a model of a new word for addition to a word model database of a speech

recognition system of Häb-Umbach *et al* (figures 1 & 2) reads on the limitation that the

acoustic description is speech-based (column 3 lines 14-17) and the step of identifying

a speech-based acoustic description *from the speech signal representing the user's*

pronunciation of the word, wherein the speech-based acoustic description is not

associated with the text of the word (column 4 lines 35-42). It would have been obvious

to a person of ordinary skill in the art of speech signal processing at the time of the

invention to apply the method/teachings of Häb-Umbach *et al* to the device/method of

Gupta *et al* so as to make recognition not be dependent on transcription by having any

subsequent transcription be a separate independent operation apart from of recognition.

21.   Regarding claim 13, the claim is set forth with the same limits as claim 12.

Gupta *et al* (column 7 lines 29-33) reads on the feature of *generating a plurality of*

possible phonetic descriptions, using at least one model (column 4 lines 19-21) *to score*

each possible phonetic description (column 5 lines 3-8) *and selecting the possible*

phonetic description with the highest score as the speech-based phonetic description

(column 5 line 16-18).

22.   Regarding claim 14, the claim is set forth with the same limits as claim 13.

Gupta *et al* (column 9 lines 47-62) reads on the feature of *using an acoustic model* (of

allophones, column 9 line 59) *and a language model* (using *linguistic rules*, column 9

line 38).

23.   Regarding claim 15, the claim is set forth with the same limits as claim 14.

Gupta *et al* reads on the feature of *using a language model comprises using a*

language model that is based on syllable-like units (with the *sub-word units* of column 9

line 62).

24.   Regarding claim 16, the claim is set forth with the same limits as claim 15.

Gupta *et al* (column 10 lines 6-7) reads on the feature of *generating acoustic model*

scores for each of the phonemes in a syllable-like unit & (in column 10 lines 15-18)

summing the acoustic model scores of the phonemes to generate an acoustic model

score for the syllable-like unit.

25.   Regarding claim 17, the claim is set forth with the same limits as claim 12.

-    Gupta *et al* (column 10 lines 64-66) reads on the feature of *generating a score for*

the text-based phonetic description based on the correspondence (column 11 lines

29-31) between the text based phonetic description and the representation of the

speech signal;

-    Gupta *et al* (column 12 lines 10-16) reads on the feature of *generating a score for*

the speech-based phonetic description based on the correspondence between the

speech-based phonetic description and the representation of the speech signal

-    Gupta *et al* (column 14 lines 24-27) reads on the feature of *selecting the phonetic*

description with the highest score.

Gupta *et al*, Häb-Umbach *et al* & Contolini *et al*

26.   Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gupta

et al in view of Häb-Umbach *et al* and further in view of Contolini *et al*.

27.   Regarding claim 18, neither Gupta *et al* nor Häb-Umbach *et al* specify a product

reaching a state accessible for human intervention, so do not produce audible

pronunciations.

- Contolini _et al_ (by selecting the _speaker icon_ at the left of figure 2) reads on the feature of _receiving an instruction to generate a audible pronunciation of a phonetic description previously added to the speech recognition lexicon,_

- Contolini _et al_ (column 4 line 52-56) reads on the feature of _retrieving the added phonetic description from the speech recognition lexicon, causing an audible pronunciation to be generated based on the retrieved phonetic description_ (column 4 line 40).

- It would have been obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Contolini _et al_ to the device/method of Gupta _et al_ & Häb-Umbach _et al_ so as to evaluate generated speech.

Schulze & Gupta _et al_

28.   Claims 19-21 are rejected under 35 U.S.C. 103(a) as being anticipated by Schulze (U.S. Patent 6,167,369 A) in view of Gupta _et al_.

29.   Regarding claim 19, the features of the _automatic language identification using both N-gram and word information_ of Schulze reads on the _speech recognition system having a language model generated through a process_ of the immediate application as follows:

- Schulze does teach the feature of _breaking each word in a dictionary into units_ (column 2 lines 55-60) for _n-grams_ but does not specify that the units be strictly _syllable-like._ Gupta _et al_ reads on the feature of _breaking each word in a dictionary_

into *syllable-like unit* (with the *sub-word units* of column 9 line 62, with the stipulation given in column 3 lines 53-67). Schulze (column 1 line 29) then teaches the further feature of *for each word* and teaches (by *retaining trigrams* – column 1 lines 24-34 – into *sequences*) *grouping the syllable-like units of the word into n-grams.* It would have been obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Gupta *et al* to the device/method of Schulze so as to separate the contiguous signal into discrete portions corresponding to the dictionary for match processing.

- Schulze (column 12 lines 21-22) reads on the feature of *counting the total number of n-gram occurrences in the dictionary;*

- Schulze (column 12 lines 40-41) reads on the feature of *for each n-gram, counting the number of occurrences of the n-gram in the dictionary and dividing this count by the total number of n-gram occurrences to form a language model probability for the n-gram.*

30. Regarding claim 20, the claim is set forth with the same limits as claim 19. Schulze (column 12 lines 35-37) reads on the feature of *breaking the words by preferring syllable like units that occur more frequently in the dictionary over syllable-like units that occur less frequently.*

31. Regarding claim 21, the claim is set forth with the same limits as claim 20. Schulze (column 12 line 40) reads on the feature of *updating the frequencies of the syllable-like units into which the word is broken.*

Conclusion

32.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

33.   Any inquiry concerning this communication or earlier communications from the

Examiner should be directed to Daniel A. Nolan at telephone (703) 305-1368 whose

normal business hours are Mon, Tue, Thu & Fri, from 7 AM to 5 PM.

If attempts to contact the examiner by telephone are unsuccessful, supervisor

Richemond Dorvil can be reached at (703)305-9645.

The fax phone number for Technology Center 2600 is (703)872-9314. Label

informal and draft communications as "DRAFT" or "PROPOSED", & designate formal

communications as "EXPEDITED PROCEDURE". Formal response to this action may

be faxed according to the above instructions,

or mailed to: Mail Stop AF (or CPA, etc. – see Official Gazette, 04 November 2003)
                     P.O. Box 1450
                     Alexandria, VA 22313-1450

or hand-deliver to: Crystal Park 2,
                     2121 Crystal Drive, Arlington, VA,
                     Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to Technology Center 2600 Customer Service Office at

telephone number (703) 306-0377.

                                          Daniel A. Nolan
                                          Examiner
                                          Art Unit 2654

DAN/d
April 25, 2004

RICHEMOND DORVIL
SUPERVISORY PATENT EXAMINER